Curiosity Guide #202
Levers

Accompanies Curious Crew, Season 2, Episode 2 (#202)

Lifting Soap

Investigation #5

Description

Create a lever and experiment with changing the effort or force needed to lift a load.

Materials

- Centimeter ruler. Wood works best.
- Ziploc bag
- Dry bar of soap
- Masking, duct, or packing tape
- About 300 pennies or metal washers
- Pencil or wooden dowel
- Scissors

Procedure

1) Cut a slit on **one** side of the plastic bag, just below the zip. The slit should be big enough to slide the end of the ruler through the side of the baggie. The baggie will serve as the effort end of the lever.
2) Slide the ruler one centimeter through the slit.
3) Tape the zip of the baggie to the ruler so that the baggie hangs open.
4) Tape the pencil or dowel so that it lies flat along the edge of a table. This will serve as the fulcrum.
5) Rest the ruler on the pencil so the baggie hangs off the table.

6) Leave the ruler on the table. Place the bar of soap on the far end of the ruler. This is the load end.
7) Slide the ruler until it touches the pencil at the 6 centimeter mark on the ruler.
8) Begin placing pennies or washers in the baggie. Count each one as it goes in.
9) When the soap lifts off the table, record the number of pennies in the baggie.
10) Move the ruler to the 8 centimeter mark. Test again, counting the number of pennies. Record your data.
11) Conduct a third trial at 10 centimeters. Record data.
12) Keep testing the lever by moving the baggie further off the table, 2 centimeters at a time. Record data each time.
13) Try the same series of investigations with two soap bars. Predict how many pennies will lift the stacked soap bars. Were you right?

My Results

Explanation

The force or work that is put into a lever is called the effort, so that end of the lever is the effort end. The heavy end is called the load. The point where the arm or beam touches the pencil is the fulcrum.

A lever can give a mechanical advantage and lift heavy objects with little effort simply by placing the fulcrum in a specific spot. The closer the load end or load arm is to the fulcrum, the less effort will be needed to lift the load.

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